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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,620	02/20/2004	Liwen Jiang	14769US02	7208

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EXAMINER	
KUMAR, VINOD	

ART UNIT	PAPER NUMBER
1638	

DATE MAILED: 08/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/783,620	JIANG ET AL.	
	Examiner	Art Unit	
	Vinod Kumar	1638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-29 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-29 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 02/20/204 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-29 are pending. Claims 1-29 are being examined on merits in this Office action.

Specification

2. The disclosure is objected to because of the following informalities:

Page 7, paragraph 0009, lines 4-6 and 9, has improper text format. These lines should be aligned with rest of the text on the page.

Page 17, paragraph 0052, line 1, "EXMAPLE" is misspelled.

Page 17, paragraph 0053, line 2, "EXMAPLE" is misspelled.

3. The disclosure is objected to because it fails to refer to the indicated sequences by its sequence identifier as required by 37 CFR 1.821. See page 12, lines 25-28; page 13, line 2; page 15, paragraph 0047, lines 11-12. If the sequences appearing in the specification do not have sequence ID numbers assigned to them, then an amendment to the sequence listing will be required as well. There must not be any new matter submitted, therefore it is important to be careful to include only the sequences that are already disclosed in the current specification. Failure to correct the deficiency will be held a non-responsive to this Office action.

Appropriate corrections are required.

Drawings

4. All drawings do not comply with 37 CFR 1.84(g) because they contain frames.

The drawings are objected to because references to restriction sites in Figures 1 and 2 are not readable. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

5. Claims 17-18 and 21-23 are objected to because of the following informalities:

In claims 17 and 22, replace "a" after "comprising" and before "DNA" with --the--.

In claim 18, replace "a" after "comprising" and before "vector" with --the--.

In claim 21, line 1, replace "a" after "comprising" and before "DNA" with --the--.

In claim 23, line 2, replace "a" after "including" and before "DNA" with --the--.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite in its recitation "a DNA construct to generate and direct the processing, targeting and stably accumulating of target proteins", which is confusing since it unclear what is intended? It is unclear how a DNA construct made up of nucleic acid can generate, process, target, and stably accumulate a target protein.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite in its recitation "a promoter sequence capable of directing expression", which is confusing since it unclear about the conditions that makes a "promoter sequence capable of directing expression".

In claim 1, it is unclear whether DNA construct comprising a promoter sequence, a first DNA sequence, a second DNA sequence and a third DNA sequence are operably linked or just present anywhere in the DNA construct.

Claims 4-6, and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite in its recitation "derived", which is confusing, since it is unclear what is retained in derived product.

Claims 9 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite in its recitation "a spacer sequence in front of the transmembrane domain

sequence", which is confusing, since the metes and bounds of recitation "in front" are unclear. Is the spacer sequence operably linked to 5' end of transmembrane domain?

Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite in its recitation "engineered signal peptide", which is confusing since it is unclear whether the "signal peptide" sequence is operably linked to target gene. It is also unclear whether the "signal peptide" is present at N terminal or C-terminal end of target sequence.

Appropriate corrections/clarifications are required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 1-29 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a DNA construct comprising a promoter sequence capable of directing expression in plant seeds which is operably linked to a target sequence comprising at its N-terminal end a vacuolar sorting determinant signal, such as proaleurin signal, wherein C-terminal end of target sequence is operably linked with TMD of BP-80 protein, which is further operably linked with CT of a α-TIP protein, does not reasonably provide enablement for a DNA construct comprising a promoter sequence capable of directing expression in plant seeds which is operably linked to any target sequence comprising at its N-terminal end any signal sequence, wherein C-terminal end of target sequence is operably linked with any TMD of any protein, which is further operably linked with any CT of any protein. The claims contain subject matter

which was not described in the specification in such a way as to enable any person skilled in the art to which it pertains, with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

The claims are broadly drawn to a DNA construct to generate and direct the processing, targeting and stably accumulating of target proteins in transgenic plant seeds comprising a promoter sequence, first DNA sequence encoding the target protein, a second DNA sequence having a transmembrane domain sequence and a cytoplasmic tail sequence, and a third sequence functioning as a termination region in the plant, or wherein construct further comprises a spacer sequence in front of the transmembrane domain sequence, or a transgenic plant and a method of producing said transgenic plant comprising said construct.

The specification describes expression cassette for target protein expression comprising 35S CaMV promoter operably linked to sequence encoding a reporter protein (YFP, hG-CSF or POL) fused translationally at 5' end of TMD of BP-80, which is further translationally fused at 5' of CT of α-TIP. The construct further carries transcription termination NOS at the 3' end of operably linked sequences as described above. The specification further describes use of said construct in transforming tobacco plants using *Agrobacterium* mediated transformation method. Subcellular localization of transgenic protein in leaves and seeds is shown through western blot analysis and fluorescent signal detection. See pages 15-16, examples 1-3; figures 1-8.

Claim 1 encompasses a DNA construct comprising a target sequence translationally fused to any transmembrane domain and any cytoplasmic tail sequences, which deliver and stably accumulate the target protein to subcellular compartment of protein storage vacuole of the cell. Specification provides guidance on using TMD

sequence of BP-80 and the CT sequence of α-TIP in targeting and stably accumulating a target protein in PSV-crystalloid, a subcellular compartment of vacuole which is free of proteolytic activity. Specification does not provide guidance on 1) TMD and CT sequences derived from the same protein and 2) TMD and CT sequences derived from other than BP-80 and α-TIP proteins, in targeting and stably accumulating a target protein in PSV-crystalloid compartment of a vacuole as encompassed by the claim.

Applicant's attention is specifically drawn to page 6, paragraph 1st, lines 9-18 of specification, wherein Applicants admit "a reporter containing the BP-80 TMD and CT reached the lytic vacuole via Golgi, whereas substitution with the α-tonoplast intrinsic protein (α-TIP) CT redirected the reporter to the PSV, by passing the Golgi". This implies that except for CT sequence derived from α-TIP protein, CT sequences from other proteins as encompassed by the claim would not have the ability to redirect a target protein to the PSV. Furthermore, teachings of the prior art, such as Wandelt et al. (Plant Journal, 2:181-192, 1992), and Applicant's admission on page 3 of specification, vividly describes that a target protein targeted to lytic vacuole is exposed to proteolytic degradation environment, resulting in drop in its accumulation in storage tissues including seeds. It is highly unpredictable that any TMD sequence translationally fused with any CT sequence would direct and stably accumulate a target protein in plant storage tissue including seeds. Undue experimentation is required by a skilled artisan in determining which TMD sequence of which protein when translationally fused with which CT sequence can direct and stably accumulate a target protein to subcompartments of protein storage vacuole of cells.

Claim 15 encompasses any signal peptide sequence that would direct and stably accumulate a target protein in subcompartments of protein storage vacuole of the cells. Specification provides guidance on using vacuolar sorting determinant derived from N-terminal signal sequence of aleurain. The specification does not provide guidance how signal sequences, such as, chloroplast, mitochondrial or extracellular signal peptide sequences can be used with the claimed DNA construct to direct a target protein subcompartments of protein storage vacuole of cells. Undue experimentation is required by a skilled artisan to determine how to use any signal sequence to direct a target protein to subcompartments of protein storage vacuole of cells.

See Genentech, Inc. v. Novo Nordisk, A/S, USPQ2d 1001, 1005 (Fed. Cir. 1997), which teaches that "the specification, not the knowledge of one skilled in the art" must supply the enabling aspects of the invention.

Given the breadth of the claims, unpredictability of the art and lack of guidance of the specification, as discussed above, undue experimentation would be required by one skilled in the art to make and use the claimed invention. Therefore, it is maintained that the claims are not commensurate in scope with the teachings of the specification.

8. Claim 26 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The invention appears to employ novel biological materials, specifically the vectors pSB130 and pBI121 comprising claimed DNA construct. Since the biological materials are essential to the claimed invention they must be obtainable by a repeatable method set forth in the specification or otherwise readily available to the public. If the

biological materials are not so obtainable or available, the requirements of 35 U.S.C. § 112 may be satisfied by a deposit of the biological materials. The specification does not disclose a repeatable process to obtain the biological materials and it is not apparent if the biological materials are readily available to the public. If the deposit is made under the Budapest Treaty, then an affidavit or declaration by Applicant, or a statement by an attorney of record over his or her signature and registration number, stating that the specific biological materials have been deposited under the Budapest Treaty and that the biological materials will be irrevocably and without restriction or condition released to the public upon the issuance of a patent, would satisfy the deposit requirement made herein. If the deposit has not been made under the Budapest Treaty, then in order to certify that the deposit meets the criteria set forth in 37 C.F.R. §§ 1.801-1.809, Applicant may provide assurance of compliance by an affidavit or declaration, or by a statement by an attorney of record over his or her signature and registration number, showing that:

(a) during the pendency of this application, access to the invention will be afforded to the Commissioner upon request;

(b) all restrictions upon availability to the public will be irrevocably removed upon granting of the patent;

(c) the deposit will be maintained in a public depository for a period of 30 years or 5 years after the last request or for the effective life of the patent, whichever is longer;

(d) a test of the viability of the biological material at the time of deposit will be made (see 37 C.F.R. § 1.807); and

(e) the deposit will be replaced if it should ever become inviable.

Applicant's attention is directed to M.P.E.P. §2400 in general, and specifically to §2411.05, as well as to 37 C.F.R. § 1.809(d), wherein it is set forth that "the

specification shall contain the accession number for the deposit, the date of the deposit, the name and address of the depository, and a description of the deposited material sufficient to specifically identify it and to permit examination." The specification should be amended to include this information, however, Applicant is cautioned to avoid the entry of new matter into the specification by adding any other information. Finally, Applicant is advised that the address for the ATCC has recently changed, and that the new address should appear in the specification. The new address is:

American Type Culture Collection

10801 University Boulevard

Manassas, VA 20110-2209

9. Claims 1-29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The specification does not have adequate written description for the genus of transmembrane domain sequences, genus of cytoplasmic tail sequences, genus of spacer sequences with proteolytic cleavage sequence, genus of signal peptide sequences and one skilled in the art cannot reliably predict the structures based on BP-80, α-TIP, proaleurin and a spacer sequence with proteolytic cleavage site (DYKDDDDKSKTASQAK). The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are broadly drawn to a DNA construct to generate and direct the processing, targeting and stably accumulating of target proteins in transgenic plant seeds comprising a promoter sequence, first DNA sequence encoding the target protein, a second DNA sequence having a transmembrane domain sequence and a

cytoplasmic tail sequence, and a third sequence functioning as a termination region in the plant, or wherein construct further comprises a spacer sequence in front of the transmembrane domain sequence, or a transgenic plant and a method of producing said transgenic plant comprising said construct.

The specification describes expression cassette for target protein expression comprising 35S CaMV promoter operably linked to sequence encoding a reporter protein (YFP, hG-CSF or POL) fused translationally at 5' end of TMD of BP-80, which was further translationally fused at 5' of CT of α-TIP. The construct further carried transcription termination NOS at the 3' end of operably linked sequences as described above. The specification further describes use of said construct in transforming tobacco plants using *Agrobacterium* mediated transformation method. Subcellular localization of transgenic protein in leaves and seeds is shown through western blot analysis and fluorescent signal detection. See pages 15-16, examples 1-3; figure 1-8.

Claim 1 encompasses a DNA construct comprising any transmembrane domain sequences and any cytoplasmic tail sequences that deliver the target protein to subcellular compartment of protein storage vacuole of the cell. Claims 9-10 encompass any spacer sequence and claims 11-12 encompass any spacer sequence with any proteolytic cleavage sequence. Claim 15 encompasses any signal sequence. The specification fails to describe these significantly large number of these undisclosed structures as encompassed by a broadly claimed genus. Furthermore, specification does not describe the functional elements that are shared between these different structures, such that a skilled artisan can predictably determine that using one spacer sequence with one proteolytic cleavage site and translationally fused to one transmembrane domain sequence, which is further translationally fused with one

cytoplasmic tail sequence would serve as anchors for delivering and stable accumulation of the target protein with one signal sequence to subcompartments of protein storage vacuoles of the cells. Thus, Applicants have failed to correlate undisclosed structures of their broadly claimed genus to the function of targeting a protein of interest to subcompartments of protein storage vacuoles. The specification does not reduce to practice the broadly claimed genus. Accordingly, there is lack of adequate description to inform a skilled artisan that applicant was in possession of the claimed invention at the time of filing. See Written Description guidelines published in Federal Register/Vol.66, No. 4/Friday, January 5, 2001/Notices; p. 1099-1111.

Given the claim breadth and lack of guidance as discussed above, the specification does not provide written description of the genus broadly claimed. Accordingly, one skilled in the art would not have recognized Applicants to have been in possession of the claimed invention at the time of filing.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1, 4, 7-9, 11, 13 and 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Jiang et al. (The Journal of Cell Biology, 143:1183-1199, 1998).

Jiang et al. teach a DNA construct comprising a promoter sequence (35S) that is capable of expression in plant seed, operably linked with a first DNA sequence

encoding proaleurain (target protein), which is operably linked with a second DNA sequence having a transmembrane domain (TMD) derived from BP-80 or α-TIP protein and a cytoplasmic tail (CT) sequence derived from BP-80 or α-TIP protein, wherein second nucleic acid sequence serve as anchors for delivering the target proteins to subcompartments of protein storage vacuoles of the cells. The second nucleic acid is operably linked with a third nucleic acid that functions as transcription region (NOS terminator in pBI221 vector). The reference further teaches that subcompartments comprise globoids or crystalloids and construct comprising a spacer sequence operably linked to 5' end of TMD. The reference further teaches a proteolytic cleavage sequence Kex2 between 3' end of target protein sequence and 5' end of TMD. The reference further teaches association of protease activity within protein storage vacuole that acts on the proteolytic cleavage sequence so that target protein separates from the transmembrane domain. The reference further teaches proaleurain signal peptide sequence present at the 5' end of target sequence. The DNA construct taught in the reference was used to transform tobacco suspension culture protoplasts. In particular, see page 1183, abstract; page 1184, column 2nd through the end of first paragraph of column 1st of page 1185; page 1186, results, figure 1; page 1187, table 1; page 1188, figure 2; page 1189, figures 3 and 4; page 1190, figure 5; page 1191, table II, figure 6; page 1192, figure 7; page 1194, table III; page 1196, figure 10. The property of spacer sequence to keep the target protein in proper folded form is inherent to the spacer sequence taught in the reference. Likewise, the property of generating, directing the processing, targeting and stably accumulating of target protein in any transgenic plant seed is inherent to the construct taught in the reference. See MPEP § 2112.01.

Accordingly, Jiang et al. anticipate the claimed invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 2-3, 5-6, 10, 12, 14-16 and 21-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al. (The Journal of Cell Biology, 143:1183-1199, 1998) in view of Altenbach et al. (Plant Molecular Biology, 13:513-522, 1989) and Goddijn et al. (Trends Biotechnol. 13: 379-387, 1995).

Jiang et al. teach a DNA construct comprising a promoter sequence (35S) that is capable of expression in plant seed, operably linked with a first DNA sequence encoding proaleurain (target protein), which is operably linked with a second DNA sequence having a transmembrane domain (TMD) derived from BP-80 or α-TIP protein and a cytoplasmic tail (CT) sequence derived from BP-80 or α-TIP protein, wherein second nucleic acid sequence serve as anchors for delivering the target proteins to subcompartments of protein storage vacuoles of the cells. The second nucleic acid is operably linked with a third nucleic acid that functions as transcription region (NOS terminator in pBI221 vector). The reference further teaches that subcompartments comprise globoids or crystalloids and construct comprising a spacer sequence operably linked to 5' end of TMD. The reference further teaches a proteolytic cleavage sequence Kex2 between 3' end of target protein sequence and 5' end of TMD. The reference further teaches association of protease activity within protein storage vacuole that acts

on the proteolytic cleavage sequence so that target protein separates from the transmembrane domain. The reference further teaches proaleurain signal peptide sequence present at the 5' end of target sequence (proaleurain). The DNA construct taught in the reference was used to transform tobacco suspension culture protoplasts. In particular, see page 1183, abstract; page 1184, column 2nd through the end of first paragraph of column 1st of page 1185; page 1186, results, figure 1; page 1187, table 1; page 1188, figure 2; page 1189, figures 3 and 4; page 1190, figure 5; page 1191, table II, figure 6; page 1192, figure 7; page 1194, table III; page 1196, figure 10.

Jiang et al. do not teach transgenic plant or seed expressing target protein under a seed specific promoter, such as phaseolin or glutelin Gt1 promoter.

Altenbach et al. teach a seed-specific phaseolin promoter. See in particular, page 5123, abstract; page 514-515, materials and methods.

Goddijn et al. (Trends Biotechnol. 13: 379-387, 1995) teach that it is well known in the art that seeds can also be used as "bioreactors" for the production of pharmaceutically or industrially important products. See the entire article.

It would have been prima facie obvious to one skilled in the art at the time the claimed invention was made to modify Jiang et al. DNA construct by operably linking any target gene of interest to any seed-specific promoter including the seed-specific phaseolin promoter taught by Altenbach et al., and subsequently using the modified DNA construct to transform Jiang et al. tobacco cells using any *Agrobacterium tumefaciens* mediated transformation method including the one taught by Altenbach et al., to obtain transgenic plants with seeds expressing a target protein of interest. Given that Goddijn et al. teach that seeds can be used as "bioreactors" for the production of pharmaceutically or industrially important products, one of the ordinary skill in the art

would have been motivated to express the modified DNA construct of Jiang et al. in any plant cell including tobacco cells of Jiang et al. to obtain transgenic tobacco plants with seeds expressing high levels of a target protein of interest.

Thus, the claimed invention as a whole was prima facie obvious over the combined teachings of the prior art.

Conclusions

DAVID H. KRUSE, PH.D.
PRIMARY EXAMINER

12. No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vinod Kumar whose telephone number is (571) 272-4445. The examiner can normally be reached on 8.30 a.m. to 5.00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached on (571) 272-0975. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).